

## Claims

1. An arrangement for integrating a mechanical structure of antenna head of a radio phone, which structure comprises a ground plane, a planar antenna with at least one feed conductor and a speaker with a first and second audio conductor, the arrangement comprising a radiator component that is arranged to function both as a radio wave radiator in the planar antenna and as a sound wave radiator in the speaker, and said antenna feed conductor and one of said audio conductors being galvanically connected to a same conductor plane in the radiator component.
2. An arrangement according to claim 1, wherein the planar antenna has a first and a second feed conductors and said radiator component comprises a planar layer of an electret material having a static inner electric field, a first conductor plane on its top surface and a second conductor plane on its bottom surface, to the first conductor plane being connected the first feed conductor and the first audio conductor, and to the second conductor plane being connected the second antenna feed conductor and the second audio conductor, and the first and second conductor planes being in a radio transmitting situation arranged to get an identical feed through said feed conductors.
3. An arrangement according to claim 1, wherein said radiator component comprises a first and second electret layer, which layers have opposite static inner electric fields, a conductive film between the first and second electret layer, a flexible and sound-permeable first support layer above the first electret layer, a flexible and sound-permeable second support layer underneath the second electret layer, a first conductor layer on the bottom surface of the first support layer and a second conductor layer on the top surface of the second support layer, said first conductor layer being in contact with the first electret layer, and said second conductor layer being in contact with the second electret layer, the antenna feed conductor being galvanically connected to the first and second conductor layer, the first audio conductor being connected to the first and second conductor layer and the second audio conductor being connected to said conductive film.
4. An arrangement according to claim 3, further comprising a dielectric frame around the radiator component and between the radiator component and ground plane to prevent an acoustic short of the speaker and to support the radiator component.

5. An arrangement according to claim 3, further comprising a radio radiator on the top surface of said radiator component.
6. An arrangement according to claim 2, said electret layer being the EMFi type.
7. An arrangement according to claim 3, said electret layers being the EMFi type.
- 5 8. An arrangement according to claim 1, said conductor plane of the radiator component being short-circuited at a certain point to the ground plane to form a PIFA type antenna.
9. A radio phone comprising a planar antenna with a feed conductor, a speaker with two audio conductors, and a radiator component arranged to function both as a  
10 radio wave radiator in the planar antenna and as a sound wave radiator in the speaker, said feed conductor and one of said audio conductors being galvanically connected to a same conductor plane in the radiator component.